A Web Tool for Building Parallel Corpora of Spoken and Sign Languages

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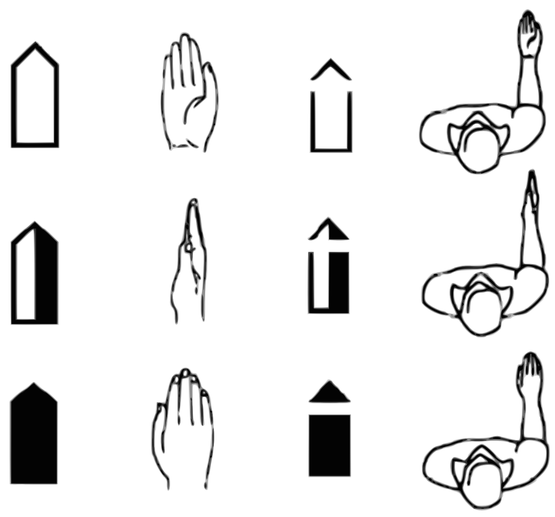
Sign Languages

- Over 200 distinct sign languages in the world.
- 70 million deaf people over the world.
- 5.7 million people with hearing impairment in Brazil.
- Children who lose hearing before beginning to speak have a sign language as their native language.
- Among several proposals for writing sign languages, the most prominently is the SignWriting.
- The SignWriting system defines sets of symbols for handshapes, facial expressions, body locations, orientation, contact, and movement.



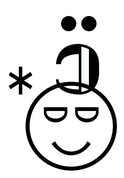
Objectives

- To build an online tool for manual annotation of texts in any spoken language with SignWriting in any sign language.
- To allow the creation of parallel corpora between spoken and sign languages.
- To design it in a way that it eases the task of human annotators by giving smart suggestions as the annotation progresses.
- A parallel corpus between English and American Sign Language could be used for training Machine Learning models for automatic translation between the two languages.

SignWriting Representation

- Signs stored as images have limited applicability.
- Formal SignWriting (FSW) is the latest format for encoding signs.
- FSW encodes logographic words (signs) as strings.

M518x517S16d10494x467S33e00482x482S31b00482x482S21900496x456S20500475x476

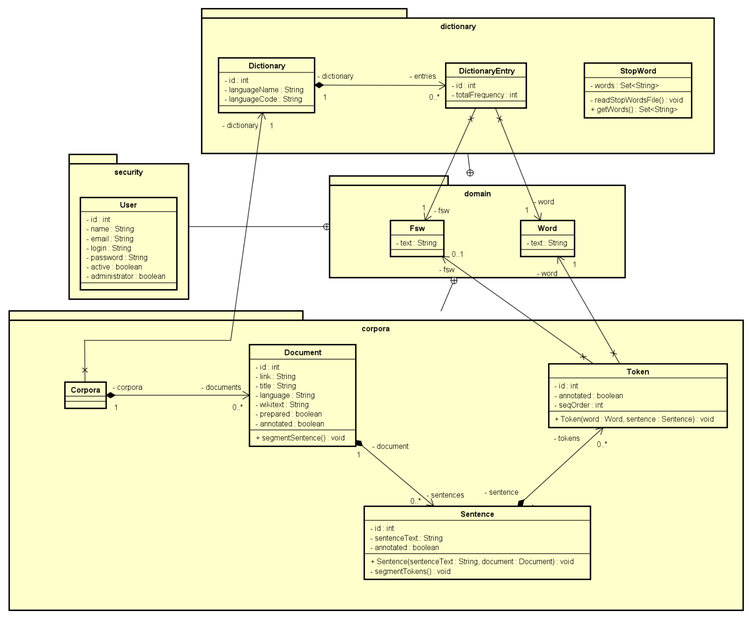


A Spoken-Sign Corpus Annotation Tool

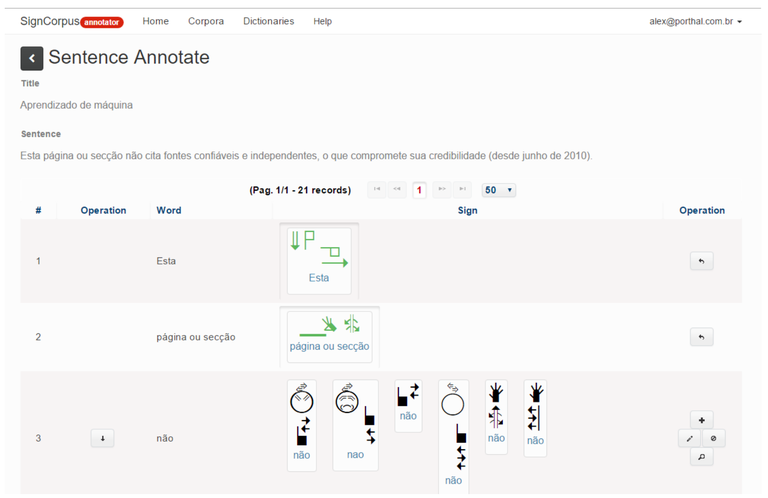
- Uses SignWriting and an existing tool for constructing new signs.
- Supports multiple sign and spoken languages.
- Allows collaborative annotation.
- Provides annotation suggestions based on previous annotations.
- Supports importing an initial dictionary from the SignPuddle portal.

Design and Implementation

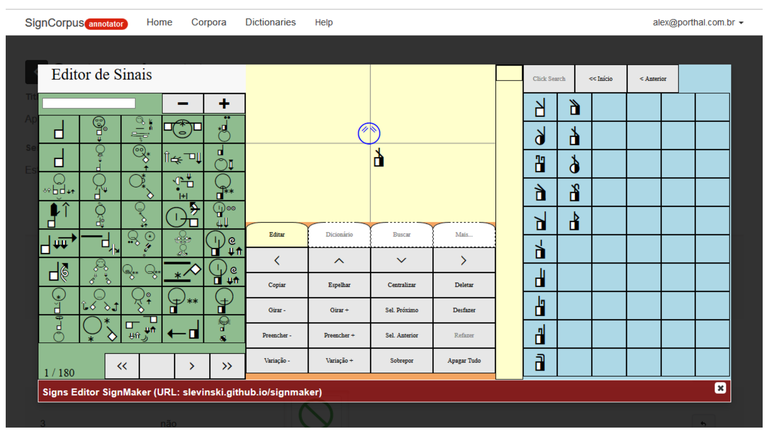
- Java Web platform.
- EJB Application (Enterprise JavaBeans).
- JSF framework (Java Server Faces).
- MVC architecture (Model-View-Controller).



Domain diagram.



Screenshot of the sentence annotation interface.



Screenshot of the SignMaker editor interface.

Final Remarks and Future Work

- Helping the development of proper resources for sign languages that can then be used in state-of-the-art models currently used in tools for spoken languages.
- Open source: https://bitbucket.org/unipampa/signcorpus.
- Next step is to improve the searching and ranking of candidate signs by considering word inflections and by building language models for sign sentences.

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